



Association for
Computing Machinery

NEWS RELEASE

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Pioneer of Multicore Processor Design Receives the ACM-IEEE CS Eckert-Mauchly Award

Stanford University Professor Kunle Olukotun Made Computer Processors More Efficient and Developed Pivotal Technologies for Machine Learning

New York, NY, June 7, 2023 – ACM, the Association for Computing Machinery, today announced that Kunle Olukotun, a Professor at Stanford University, is the recipient of the [ACM-IEEE CS Eckert-Mauchly Award](#) for contributions and leadership in the development of parallel systems, especially multicore and multithreaded processors.

In the early 1990s, Olukotun became a leading designer of a new kind of microprocessor known as a “chip multiprocessor”—today called a “multicore processor.” His work demonstrated the performance advantages of multicore processors over the existing microprocessor designs at the time. He included these ideas in a landmark paper presented at the ACM Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS 1996), entitled “[The Case for a Single-Chip Multiprocessor](#).” This paper received the ASPLOS Most Influential Paper Award 15 years later. Olukotun’s multicore design eventually became the industry standard.

His insights on multicore processors and thread-level speculation research laid the foundation for Olukotun's work on fine-grained multithreading, a technique which improves the overall efficiency of computer processors (CPUs). These designs were the basis for Afara WebSystems, a server company Olukotun founded that was eventually acquired by Sun (and later Oracle). Sun Microsystems used Olukotun’s designs as a foundation for its Niagara chips, which were recognized for their outstanding performance and energy efficiency. The Niagara family of chips are now used in all of Oracle's SPARC-based servers.

Later, with Christos Kozyrakis and others, Olukotun was a leader in designing the Transactional Coherence and Consistency (TCC) approach to simplify parallel programming. He was a co-author of the paper “[Transactional Memory Coherence and Consistency](#),” which was presented at the 2004 International Symposium on Computer Architecture (ISCA) and received the Most Influential Paper

Award in 2019. Olukotun is one of only two researchers who have received the Most Influential Paper Award from both ASPLOS and ISCA.

Olukotun's work establishing the coarse-grained reconfigurable dataflow has played a pivotal role in machine learning and other data-intensive applications. After publishing several papers on this approach, he co-founded the startup SambaNova, a machine learning and artificial intelligence company where he continues to serve as Chief Technologist.

Olukotun is the Cadence Design Systems Professor and a Professor of Electrical Engineering and Computer Science at Stanford University. At Stanford, he is the Director of the Pervasive Parallel Lab and a member of the Data Analytics for What's Next (DAWN) Lab, developing infrastructure for usable machine learning. Olukotun has authored more than 200 publications, which have received over 20,000 citations, and he has been issued 12 patents. He has also co-founded several companies. Olukotun received a PhD in computer engineering from the University of Michigan. He is a member of the National Academy of Engineering, an ACM Fellow, and an IEEE Fellow. He also received the IEEE Harry H. Goode Memorial Award.

He will be formally recognized with the Eckert-Mauchly Award during an awards luncheon on Tuesday, June 20 at the [International Symposium on Computer Architecture](#) (ISCA 2023).

About the Eckert-Mauchly Award

ACM and IEEE Computer Society co-sponsor the [Eckert-Mauchly Award](#), which was initiated in 1979. It recognizes contributions to computer and digital systems architecture and comes with a \$5,000 prize. The award was named for John Presper Eckert and John William Mauchly, who collaborated on the design and construction of the Electronic Numerical Integrator and Computer (ENIAC), the pioneering large-scale electronic computing machine, which was completed in 1947.

About ACM

[ACM, the Association for Computing Machinery](#) is the world's largest educational and scientific computing society, uniting computing educators, researchers, and professionals to inspire dialogue, share resources, and address the field's challenges. ACM strengthens the computing profession's collective voice through strong leadership, promotion of the highest standards, and recognition of technical excellence. ACM supports the professional growth of its members by providing opportunities for life-long learning, career development, and professional networking.

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